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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/757,099	01/08/2001	Michael Geva	GEVA 6-2-4-21	6929

27964 7590 09/26/2003

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EXAMINER

WANG, GEORGE Y

ART UNIT	PAPER NUMBER
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2871

DATE MAILED: 09/26/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application N .

09/757,099

Applicant(s)

GEVA ET AL.

Examiner

George Y. Wang

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A

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-16 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-16 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 08 January 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: .

## **DETAILED ACTION**

### ***Response to Arguments***

1. In view of the Appeal Brief filed on June 5, 2003, PROSECUTION IS HEREBY REOPENED. A new grounds of rejection is set forth below.

To avoid abandonment of the application, appellant must exercise one of the following two options:

- (1) file a reply under 37 CFR 1.111 (if this Office action is non-final) or a reply under 37 CFR 1.113 (if this Office action is final); or,
- (2) request reinstatement of the appeal.

If reinstatement of the appeal is requested, such request must be accompanied by a supplemental appeal brief, but no new amendments, affidavits (37 CFR 1.130, 1.131 or 1.132) or other evidence are permitted. See 37 CFR 1.193(b)(2).

### ***Claim Rejections - 35 USC § 103***

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein

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were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

3. Claims 1 and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Burnham et al. (U.S. Patent No. 4,546,480, from hereinafter "Burnham") in view of Beernink et al. (U.S. Patent No. 5,708,674, from hereinafter "Beernink").

Burnham discloses an electronic device and method of making an electronic device having an active region (fig. 4, ref. 36) located over a substrate (fig. 4, ref. 32). Burnham teaches an undoped layer with a barrier region made up of a number of barrier layers between a plurality of undoped layers (col. 5, lines 48-56).

However, the reference fails to specifically disclose that the active layer is under the barrier layer.

Beernink discloses an electronic device having an active layer (fig. 3, ref. 13) situated beneath a barrier layer.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have disposed to the active layer beneath the barrier layer since one would be motivated to create a device with minimal layers (col. 2, lines 30-35). By preventing unwanted layers, fabrication would not only be more cost effective and more

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readily manufactured, it would prevent unwanted introductions of impurity. This would ultimately enhance reliability and minimize accompanying drawbacks (col. 3, lines 1-4).

4. Claims 2-8 and 10-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Burnham et al. (U.S. Patent No. 4,546,480, from hereinafter "Burnham") in view of DePoorter (WO 97/50133).

Burnham discloses an electronic device and method of making an electronic device having an active region (fig. 4, ref. 36) located over a substrate (fig. 4, ref. 32). Burnham teaches an undoped layer with a barrier region made up of a number of barrier layers between a plurality of undoped layers (col. 5, lines 48-56). Furthermore, the reference discloses barrier layers composed of aluminum arsenide with 5-50% aluminum composition (col. 5, lines 48-56), and having a thickness of about 1 nm and where the undoped layers each have a thickness of about 10 nm (col. 1, lines 23-34). The Burnham reference also teaches that there are no p-n junctions between the barrier and doped cladding.

Although the reference teaches a doped upper cladding (fig. 4, ref. 41), Burnham does not disclose it as being doped with zinc. Furthermore, the reference does not specifically teach the barrier region inhibiting the diffusion of zinc into the active region.

DePoorter discloses a semiconductor diode with an upper cladding doped with zinc (abstract). Furthermore, the reference teaches a barrier region that inhibits the diffusion of zinc into the active region (pg. 3, lines 21-35).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have doped the upper cladding with zinc and to construct zinc-inhibitive properties to the barrier layers since one would be motivated to alternatively have a high and low bandgap value (pg. 3, lines 21-35). Such values render the barrier layers highly effective and reliable in practice since zinc-inhibition in the layers encourage highly thin layers that have mechanical stress without the defects caused by degradation of charged ions, such as zinc atoms (pg. 3, lines 21-35).

5. Claims 17-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chen et al. (U.S. Patent No. 5,212,704, from hereinafter "Chen") in view of Burnham and Beernink.

Chen discloses an optical fiber communication system (fig. 8, ref. 80) with a transmitter (fig. 8, ref. 81) and a receiver (fig. 8, ref. 85) connected by an optical fiber (fig. 8, ref. 831). In addition, the system includes a source (abstract). Although Chen discloses an electronic device embedded in the transmitter or receiver, the reference fails to specifically disclose an electronic device having an active region located over a substrate, an undoped layer having a barrier region of multiple barrier layers, and each including aluminum, and a doped upper cladding layer located over the barrier region.

Burnham and Beernink disclose an electronic device having an active region located over a substrate, an undoped layer having a barrier region of multiple barrier layers, and each including aluminum, and a doped upper cladding layer located over the barrier region as recited above.

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It would have been obvious to one of ordinary skill in the art at the time the invention was made to have used the electronic device of Burnham since one would be motivated to reduce and eliminate defects in manufacture and variations due to high laser temperatures (col. 2, lines 41-68).


***Conclusion***

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to George Y. Wang whose telephone number is 703-305-7242. The examiner can normally be reached on M-F, 8 am - 4:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert H. Kim can be reached on 703-305-3492. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0956.

gw  
September 22, 2003

  
ROBERT H. KIM  
SUPERVISOR  
TECHNOLOGY CENTER 2000